

Supplementary Table 1. Number of samples, genotyping platforms in this study.

Ethnic groups	Stage 1				Stage 2			Further validation		
	Subjects (KD/Control)	Platform	No of autosomal SNVs		Subjects (KD/Control)	Platform	No of SNVs analyzed	Subjects (KD/Control)	Platform	No of SNVs analyzed
Genotyped			Genotyped or imputed ^a							
Japan	428/3379	Illumina Human Hap550/610	433854	7817912	1418/1700	Invader	48	1758/653	Invader	2
Taiwan	662/1107	Affymetrix SNP 6.0	697571	7391440	261/567	Sequenom MassARRAY or TaqMan	48	-	-	-
Korea	186/600	Affymetrix SNP 6.0	607758	7134078	473/484	VeraCode GoldenGate or TaqMan	48	-	-	-

KD, Kawasaki disease; SNV, single nucleotide variant

^a QC'd: MAF \geq 0.01 & info \geq 0.4

Supplementary Table 2. Sequences of the PCR primers and probes for Invader assay to genotype SNVs in *IGHV* gene region.

Genes	PCR primers	SNVs	Alleles ^a 1/2	Probes for Invader assay ^b	
<i>IGHV3-43</i>	Forward	rs61999676	<u>A/C</u>	Allele1	TGGGATGGTGGTAGCAC
	Reverse			Allele2	GGGGATGGTGGTAGCA
<i>IGHV1-45</i>	Forward	rs7141669	<u>C/T</u>	Allele1	GGGATGGTGGTAGCA
	Reverse			Allele2	GGGATGGTGGTAGCA
<i>IGHV3-48</i>	Forward	rs7148607	<u>T/C</u>	Allele1	AGTAGTACCATATACTACGC
	Reverse			Allele2	GGTAGTACCATATACTACG
<i>IGHV3-49</i>	Forward	rs2073674	<u>A/C</u>	Allele1	TTCCGCCAGGCTCCA
	Reverse			Allele2	GTCGCCAGGCTCC
<i>IGHV1-58</i>	Forward	rs2516904	<u>T/C</u>	Allele1	TAGCAGAGCTAGTAAAG
	Reverse			Allele2	CAGCAGAGCTAGTAAAG
<i>IGHV3-62</i>	Forward	rs72483334	<u>T/C</u>	Allele1	ATACCGTACTCTACACAG
	Reverse			Allele2	GATACCGTACTCTACACA
<i>IGHV3-64</i>	Forward	rs2072045	<u>C/T</u>	Allele1	CACTCHGTGAAGGGCAG
	Reverse			Allele2	AACTCHGTGAAGGGCAGATT
<i>IGHV3-66</i>	Forward	rs6423677	<u>A/C</u>	Allele1	AGCTATAAATAACTGAGACCC
	Reverse			Allele2	CGCTATAAATAACTGAGACC
<i>intergenic</i>	Forward	rs4774175	<u>G/A</u>	Allele1	CGACAAAATGATCTCAAGAT
	Reverse			Allele2	TGACAAAATGATCTCAAGATAAT
<i>IGHV1-69</i>	Forward	rs8009570	<u>G/A</u>	Allele1	CAGCAAACTACGCACA
	Reverse			Allele2	TAGCAAACTACGCACAG
<i>IGHV2-70</i>	Forward	rs2073669	<u>A/C</u>	Allele1	AGTGAAGCCACTCCA
	Reverse			Allele2	CGTGAAGCCACTCCA

PCR, polymerase chain reaction; SNVs, single-nucleotide variants.

^a Risk-associated alleles are underlined.

^b Nucleotides corresponding to variant positions are shown in red characters.

Supplementary Table 3. Sequences of the primers for PCR and direct sequencing of rs6423677.

PCR Forward	ATGTGCATTTGGTGCATGAGAGGTT
PCR Reverse	TGGATATGTGTGGCAGTTTCTAACCAA
Sequencing	GTAATACACAGCCGTGTCCTCA

PCR, polymerase chain reaction

Supplementary Table 4. Primers and their sequences used in the immunoglobulin heavy chain repertoire library preparation.

Primers	Sequence	Length
1st PCR		
Forward primers ^a		
VH1-FR1-tailed	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTGGCCTCAGTGAAGGTCTCCTGCAAG	59
VH2-FR1-tailed	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTGTCTGGTCCTACGCTGGTGAAACCC	59
VH3-FR1-tailed	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTCTGGGGGGTCCCTGAGACTCTCCTG	59
VH4-FR1-tailed	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTCTTCGGAGACCCTGTCCCTCACCTG	59
VH5-FR1-tailed	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTCGGGGAGTCTCTGAAGATCTCCTGT	59
VH6-FR1-tailed	GTGACTGGAGTTCAGACGTGTGCTCTTCCGATCTTCGCAGACCCTCTCACTCACCTGTG	59
Reverse primers ^b		
IgM-tailed	TCTTTCCCTACACGACGCTCTTCCGATCTNNNNAGGCTATAGGGAAGGAAGTCCTGTGCGAG	62
IgD-tailed	TCTTTCCCTACACGACGCTCTTCCGATCTNNNNTCAGAGCCGGGAACACATCCGGAGCCTTG	62
IgG-tailed	TCTTTCCCTACACGACGCTCTTCCGATCTNNNNGCCTCTATGACCAGGCAGCCCAGGGC	59
IgA-tailed	TCTTTCCCTACACGACGCTCTTCCGATCTNNNNAGGATAGGGAAGAAGCCCTGGACCAGGCA	62
2nd PCR ^c		
P7-2nd-PCR_idx (Fwd)	CAAGCAGAAGACGGCATA CGAGATXXXXXXGTGACTGGAGTTCAGACGTGTGCTCTTCCGATC	64
P5-2nd-PCR (Rev)	AATGATACGGCGACCACCGAGATCTACACTCTTTCCCTACACGACGCTCTTCCGATCT	58

^a Sequence tag for annealing with the 2nd forward primer is highlighted in red. Primers were created in the framework region 1 sequence which is shared within each *IGHV* gene group. VH1-FR1-tailed covers both *IGHV1* and *IGHV7* genes.

^b Sequence tag for annealing with the 2nd reverse primer is highlighted in red. Primers were designed in the constant region sequence specific to each immunoglobulin class. Twelve nucleotides including random tetramer for distinguishing adjacent clusters are written in blue letters.

^c Sequence tags for binding of the amplicons to the flow cell are highlighted in red. The forward primer has a 6-mer barcode sequence for identifying the samples (blue letters).

Supplementary Table 5. Loci with association signals of $P < 5.0 \times 10^{-8}$ in the meta-analysis of three GWAS results.

SNV groups	Chromosome	Region ^a	Genes within the region	Most significant SNVs in the region			
				dbSNP ID	<i>P</i> value	Nearest gene	Position in genes
1	4	185481949-185699898	<i>CASP3, CCDC111, MLF1IP, IRF2, ACSL1</i>	rs2720377	2.66×10^{-9}	<i>CASP3</i>	intron
2	6	30940387-32834732	<i>LTA, NFKBIL1, HLA-DRA, MICB, MCCD1</i>	rs2844485	3.66×10^{-8}	<i>LTA</i>	intron
3	6	31436581-32818678	<i>HLA-DRB5, HLA-DRB1, BTNL2, HLA-DQA1, NFKBIL1</i>	rs73729123	9.72×10^{-10}	<i>HLA-DRB5</i>	5' flanking
4	6	32198847-32788987	<i>C6orf10, HLA-DRA, BTNL2, HLA-DRB1, HLA-DQA1</i>	rs7739458	4.57×10^{-11}	<i>LOC101929163</i>	intron
5	6	32365707-32711984	<i>HLA-DQB1, BTNL2, HLA-DQA2, HLA-DQA1</i>	rs146650659	5.62×10^{-9}	<i>HLA-DQB1</i>	5' flanking
6	8	11287081-11402063	<i>BLK, FAM167A, C8orf12</i>	rs2736340	1.23×10^{-16}	<i>BLK</i>	5' flanking
7	16	85957793-85981482	<i>IRF8</i>	rs13330932	4.07×10^{-8}	<i>LOC107984811</i>	5' flanking
8	19	41147617-41369634	<i>ITPKC, C19orf54, ADCK4, RAB4B, MIA</i>	rs28493229	3.07×10^{-9}	<i>ITPKC</i>	intron
9	20	44629290-44779794	<i>CD40, NCOA5, SLC12A5, MMP9</i>	rs1883832	1.76×10^{-8}	<i>CD40</i>	5' untranslated region

^a Chromosomal regions surrounding the top significant SNVs and SNVs in 1000 Genomes with $r^2 > 0.1$ in the EAS population.
SNV locations are based on NCBI human genome reference Build 37.3.
GWAS, genome-wide association study; SNV, single nucleotide variant

Supplementary Table 6. SNVs expected to achieve P values smaller than 5.0×10^{-8} at probability higher than 0.8.

Chr	Region ^{a,b}	N of SNVs with probability > 0.8	N of SNVs with probability > 0.5	SNVs with highest probability				SNVs with lowest P value in GWAS meta-analysis			
				dbSNP ID	Position ^b	P values in GWAS meta-analysis	Simulation score	dbSNP ID	Position ^b	P values in GWAS meta-analysis	Simulation score
1	77550431-77740836	4	48	rs4546965	77641160	1.82×10^{-6}	0.96	rs78640576	77650483	1.45×10^{-6}	0.93
2	56096573-56600739	4	4	rs56120846	56152091	1.12×10^{-5}	0.84	rs72811720	56147089	1.03×10^{-5}	0.82
2	56150402-56260481	1	2	rs752816	56258606	6.04×10^{-6}	0.81	rs752816	56258606	6.04×10^{-6}	0.81
2	130252857-130424555	1	47	rs66974421	130401804	2.28×10^{-5}	0.81	rs66974421	130401804	2.28×10^{-5}	0.81
2	174293213-174307764	3	4	rs16861684	174306514	4.95×10^{-5}	0.82	rs16861684	174306514	4.95×10^{-5}	0.82
2	207723592-207838388	9	15	rs75295922	207814273	1.20×10^{-7}	0.97	rs75295922	207814273	1.20×10^{-7}	0.97
3	36487492-36537816	3	21	rs936154	36487492	3.15×10^{-5}	0.83	rs936154	36487492	3.15×10^{-5}	0.83
3	143754128-143967771	1	1	rs181511609	143957304	5.86×10^{-7}	0.83	rs181511609	143957304	5.86×10^{-7}	0.83
4	109311641-109371870	1	23	rs219474	109313182	2.06×10^{-5}	0.82	rs219474	109313182	2.06×10^{-5}	0.82
4	166615296-166661136	5	16	rs2611259	166619952	2.04×10^{-6}	0.91	rs2611259	166619952	2.04×10^{-6}	0.91
4	185481949-185699898	103	121	rs2720377	185564746	2.66×10^{-9}	1.00	rs2720377	185564746	2.66×10^{-9}	1.00
4	185817577-185873031	4	31	rs6552852	185857061	1.59×10^{-5}	0.91	rs6552852	185857061	1.59×10^{-5}	0.91
5	36786459-37583716	69	157	rs292160	36896073	1.95×10^{-5}	0.92	rs2133786	36796752	1.03×10^{-5}	0.86
5	61352528-61691357	1	27	rs10060036	61366182	5.15×10^{-5}	0.81	rs10060036	61366182	5.15×10^{-5}	0.81
5	126089582-126181193	1	12	rs62391744	126165480	1.60×10^{-5}	0.82	rs62391744	126165480	1.60×10^{-5}	0.82
6	25415117-26557121	3	79	rs407934	25504562	9.04×10^{-8}	0.98	rs407934	25504562	9.04×10^{-8}	0.98
6	25462110-32709346	26	161	rs1778477	28248594	9.57×10^{-6}	0.89	rs55645051	28168945	6.44×10^{-6}	0.84
6	26678512-28984755	213	313	rs1873212	27869631	3.90×10^{-7}	0.97	rs1873212	27869631	3.90×10^{-7}	0.97
6	27297830-31678028	58	1008	rs1264516	30411903	1.83×10^{-6}	0.96	rs1264516	30411903	1.83×10^{-6}	0.96
6	29036444-32881527	2	22	rs4504509	32399159	1.87×10^{-7}	0.99	rs4504509	32399159	1.87×10^{-7}	0.99
6	29654409-30063301	1	117	rs1632885	29912510	2.55×10^{-5}	0.80	rs1632885	29912510	2.55×10^{-5}	0.80
6	30940387-32834732	28	106	rs2857602	31533378	5.85×10^{-8}	1.00	rs2844485	31534206	3.66×10^{-8}	0.99
6	31436581-32818678	221	574	rs9270560	32560741	6.80×10^{-9}	0.83	rs73729123	32519811	9.72×10^{-10}	0.99
6	32120391-32336495	1	3	rs3129960	32300809	1.77×10^{-6}	0.89	rs3129960	32300809	1.77×10^{-6}	0.89
6	32198847-32788987	599	724	rs189914842	32353900	4.57×10^{-11}	1.00	rs189914842	32353900	4.57×10^{-11}	1.00
6	32365707-32711984	16	99	rs146650659	32646807	5.62×10^{-9}	1.00	rs146650659	32646807	5.62×10^{-9}	1.00
6	32626537-32804934	13	81	rs2071473	32782605	6.71×10^{-6}	0.96	rs2071473	32782605	6.71×10^{-6}	0.96
6	156667058-156697525	1	26	rs9480311	156667058	2.38×10^{-5}	0.80	rs9480311	156667058	2.38×10^{-5}	0.80
7	52728131-52786995	3	10	rs75400473	52779924	1.23×10^{-5}	0.88	rs75400473	52779924	1.23×10^{-5}	0.88
7	52796874-52945477	153	415	rs1919542	52862859	1.42×10^{-5}	0.90	rs77282866	52823787	3.32×10^{-6}	0.88
7	106261427-106302691	1	3	rs146912378	106271117	4.48×10^{-6}	0.80	rs146912378	106271117	4.48×10^{-6}	0.80
7	134057403-134154848	1	6	rs1791001	134125056	5.61×10^{-5}	0.84	rs1791001	134125056	5.61×10^{-5}	0.84
8	11287081-11402063	117	121	rs2736340	11343973	1.23×10^{-16}	1.00	rs2736340	11343973	1.23×10^{-16}	1.00
10	27961690-28251697	48	65	rs12217663	27998085	7.53×10^{-6}	0.92	rs12217663	27998085	7.53×10^{-6}	0.92
10	117945652-117955687	3	3	rs2251348	117952736	2.04×10^{-6}	0.88	rs2251348	117952736	2.04×10^{-6}	0.88
11	11400471-11405591	1	7	rs113420414	11405402	9.20×10^{-6}	0.80	rs113420414	11405402	9.20×10^{-6}	0.80
12	97876172-97979866	3	35	rs7309372	97894261	3.51×10^{-5}	0.85	rs7963257	97916472	1.27×10^{-5}	0.84

13	29050843-29110535	1	16	rs12428318	29096824	1.47×10^{-5}	0.84	rs12428318	29096824	1.47×10^{-5}	0.84
14	35896228-36190207	4	10	rs36099421	35978493	4.56×10^{-6}	0.88	rs36099421	35978493	4.56×10^{-6}	0.88
14	52334589-52368588	2	16	rs10145910	52334931	2.64×10^{-5}	0.84	rs79706126	52340677	2.48×10^{-5}	0.81
14	106876257-107254267	86	519	rs4774175	107152027	2.97×10^{-5}	0.88	rs61999181	106909420	1.69×10^{-6}	0.82
15	70468924-70548169	1	6	rs11631322	70479558	1.14×10^{-5}	0.84	rs11631322	70479558	1.14×10^{-5}	0.84
16	85957793-85981482	2	20	rs13330932	85974507	4.07×10^{-8}	0.98	rs13330932	85974507	4.07×10^{-8}	0.98
17	49481612-49539720	3	14	rs62062092	49502284	7.77×10^{-6}	0.85	rs55809698	49504291	7.49×10^{-6}	0.84
18	32778939-32980210	3	31	rs4799377	32844749	3.34×10^{-5}	0.82	rs4799377	32844749	3.34×10^{-5}	0.82
19	17234471-17263091	4	13	rs12979647	17242941	3.18×10^{-5}	0.83	rs11670224	17238170	2.94×10^{-5}	0.82
19	41147617-41369634	50	64	rs28493229	41224204	3.07×10^{-9}	1.00	rs28493229	41224204	3.07×10^{-9}	1.00
20	16377100-16403927	1	2	rs6111093	16382725	2.38×10^{-5}	0.82	rs6111093	16382725	2.38×10^{-5}	0.82
20	44629290-44779794	58	68	rs6032662	44734310	2.04×10^{-8}	1.00	rs1883832	44746982	1.76×10^{-8}	0.98

^a Chromosomal regions surrounding the top significant SNVs and SNVs in 1000 Genomes with $r^2 > 0.1$ in the EAS population.

^b Location of the SNVs are based on NCBI human genome reference Build 37.3.

GWAS, genome-wide association study; SNV, single nucleotide variant

Supplementary Table 7. Association data of top 48 loci in the GWAS and the follow up studies in Japan, Korea and Taiwan and the results of meta-analyses.

Chromosome	dbSNP ID	Location ^a	Alleles		GWAS						Follow-up						Combined meta-analysis ^b			Closest genes	Position within genes
			Ref	Alt	Japan KD 428		Korea KD 186		Taiwan KD 622		Japan KD 1418		Korea KD 473		Taiwan KD 261		P	OR [95% CI]	QE P		
					Control 3079		Control 600		Control 1107		Control 1700		Control 484		Control 567						
			OR	P	OR	P	OR	P	OR	P	OR	P	OR	P	OR	P					
1	rs78640576	77650483	C	T	0.74	2.93×10 ⁻³	0.68	8.29×10 ⁻³	0.77	3.50×10 ⁻³	1.11	7.75×10 ⁻²	0.99	9.26×10 ⁻¹	NA	NA	4.47×10 ⁻²	0.92 [0.85-1.00]	1.35×10 ⁻⁴	PIGK	intron
2	rs72811720	56147089	C	T	2.01	5.47×10 ⁻⁴	2.33	2.60×10 ⁻²	1.67	6.96×10 ⁻²	1.12	5.11×10 ⁻¹	1.85	1.44×10 ⁻¹	1.13	7.32×10 ⁻¹	7.43×10 ⁻⁵	1.52 [1.24-1.88]	2.19×10 ⁻¹	EFEMP1	intron
2	rs752816	56258606	C	G	1.38	4.65×10 ⁻³	1.31	9.08×10 ⁻²	1.44	1.76×10 ⁻³	0.98	7.80×10 ⁻¹	0.97	8.28×10 ⁻¹	1.03	8.38×10 ⁻¹	6.03×10 ⁻³	1.14 [1.04-1.25]	2.06×10 ⁻²	LOC105374690/MIR217HG	intron/intron
2	rs66974421	130401804	G	A	1.28	1.57×10 ⁻³	1.30	3.78×10 ⁻²	1.18	3.47×10 ⁻²	0.97	5.20×10 ⁻¹	0.99	8.99×10 ⁻¹	NA	NA	1.83×10 ⁻²	1.08 [1.01-1.16]	8.72×10 ⁻³	LOC105373614	5' flanking
2	rs16861684	174306514	G	A	1.29	5.66×10 ⁻⁴	1.31	2.96×10 ⁻²	1.12	1.42×10 ⁻¹	0.94	1.89×10 ⁻¹	0.91	3.69×10 ⁻¹	1.04	7.26×10 ⁻¹	1.01×10 ⁻¹	1.05 [0.99-1.12]	2.22×10 ⁻³	LOC105373744	intron
2	rs75295922	207814273	C	A	1.40	2.40×10 ⁻³	1.36	9.35×10 ⁻²	1.47	5.88×10 ⁻⁵	1.05	5.24×10 ⁻¹	1.05	7.05×10 ⁻¹	0.82	1.75×10 ⁻¹	2.94×10 ⁻⁴	1.18 [1.08-1.29]	3.61×10 ⁻³	CPO	intron
3	rs936154	36487492	G	A	1.22	2.13×10 ⁻²	1.68	6.33×10 ⁻⁴	1.24	3.19×10 ⁻²	1.05	3.63×10 ⁻¹	1.15	2.05×10 ⁻¹	1.39	2.40×10 ⁻²	2.52×10 ⁻⁵	1.17 [1.09-1.26]	6.39×10 ⁻²	STAC	intron
4	rs219474	109313182	C	A	1.31	9.09×10 ⁻⁴	1.26	1.08×10 ⁻¹	1.22	2.50×10 ⁻²	1.09	1.26×10 ⁻¹	0.97	8.11×10 ⁻¹	0.94	6.09×10 ⁻¹	4.62×10 ⁻⁴	1.13 [1.06-1.21]	1.14×10 ⁻¹	LOC107986301	3' flanking
4	rs2611259	166619952	A	G	0.80	7.62×10 ⁻³	0.90	4.59×10 ⁻¹	0.72	3.64×10 ⁻⁵	0.93	2.53×10 ⁻¹	0.93	4.71×10 ⁻¹	1.03	7.96×10 ⁻¹	6.35×10 ⁻⁵	0.87 [0.81-0.93]	6.10×10 ⁻²	LINC01179	intron
4	rs2720378	185568113	C	G	0.64	2.52×10 ⁻⁹	0.83	1.51×10 ⁻¹	0.81	6.60×10 ⁻³	0.85	1.66×10 ⁻³	1.00	9.63×10 ⁻¹	1.03	7.79×10 ⁻¹	1.56×10⁻⁸	0.83 [0.78-0.89]	2.89×10 ⁻³	CASP3	intron
4	rs72693559	185856229	A	G	0.76	1.08×10 ⁻²	0.60	1.15×10 ⁻²	0.78	1.97×10 ⁻²	1.01	9.24×10 ⁻¹	0.95	7.19×10 ⁻¹	1.00	9.96×10 ⁻¹	8.72×10 ⁻³	0.89 [0.81-0.97]	5.45×10 ⁻²	MIR4455	3' flanking
5	rs34920909	36792716	G	C	1.34	1.42×10 ⁻⁴	1.28	5.53×10 ⁻²	1.15	6.72×10 ⁻²	0.98	6.98×10 ⁻¹	1.13	1.93×10 ⁻¹	1.08	4.76×10 ⁻¹	7.12×10 ⁻⁴	1.12 [1.05-1.19]	3.08×10 ⁻²	LOC107986412	5' flanking
5	rs918557	61379277	T	C	1.33	2.04×10 ⁻⁴	1.22	1.04×10 ⁻¹	1.22	1.04×10 ⁻¹	1.04	4.98×10 ⁻¹	0.97	7.56×10 ⁻¹	0.96	7.42×10 ⁻¹	1.38×10 ⁻²	1.08 [1.02-1.15]	4.53×10 ⁻²	LOC105378998	intron
5	rs62391744	126165480	A	C	0.67	7.93×10 ⁻³	0.65	5.31×10 ⁻²	0.66	3.28×10 ⁻³	1.01	8.86×10 ⁻¹	0.90	4.85×10 ⁻¹	1.06	7.73×10 ⁻¹	6.41×10 ⁻³	0.85 [0.76-0.96]	3.78×10 ⁻²	LMNB1	intron
6	rs407934	25504562	C	T	0.71	9.25×10 ⁻⁴	0.77	6.13×10 ⁻²	0.68	9.37×10 ⁻⁵	0.88	5.22×10 ⁻²	0.74	3.47×10 ⁻³	1.17	2.24×10 ⁻¹	1.57×10 ⁻⁷	0.81 [0.75-0.88]	9.03×10 ⁻³	CARMIL1	intron
6	rs1873212	27869631	C	T	1.35	1.74×10 ⁻⁴	1.43	1.72×10 ⁻²	1.29	1.24×10 ⁻²	1.20	1.76×10 ⁻³	1.34	1.27×10 ⁻²	1.12	2.75×10 ⁻¹	2.01×10⁻¹⁰	1.27 [1.18-1.36]	7.28×10 ⁻¹	TRX-CAT-7	3' flanking
6	rs1778477	28248594	A	T	0.79	2.80×10 ⁻²	0.66	7.19×10 ⁻³	0.72	2.93×10 ⁻³	0.76	7.07×10 ⁻⁵	0.83	9.45×10 ⁻²	0.84	3.08×10 ⁻¹	7.24×10⁻¹⁰	0.77 [0.70-0.83]	8.26×10 ⁻¹	PGBD1	5' flanking
6	rs72843667	29812727	C	T	1.23	4.47×10 ⁻³	1.28	5.55×10 ⁻²	1.15	4.97×10 ⁻²	1.10	6.83×10 ⁻²	1.20	6.66×10 ⁻²	1.04	6.95×10 ⁻¹	1.21×10 ⁻⁵	1.15 [1.08-1.22]	6.56×10 ⁻¹	LOC105375010	3' flanking
6	rs1264516	30411903	C	A	1.31	5.16×10 ⁻⁴	1.38	7.97×10 ⁻³	1.20	2.69×10 ⁻²	1.21	2.83×10 ⁻⁴	1.29	3.48×10 ⁻³	1.14	3.49×10 ⁻¹	3.89×10⁻¹¹	1.24 [1.16-1.32]	7.48×10 ⁻¹	LOC105375012	3' flanking
6	rs2857602	31533378	G	A	0.73	8.92×10 ⁻⁶	0.67	1.21×10 ⁻³	0.86	5.92×10 ⁻²	0.77	2.48×10 ⁻⁷	0.81	2.69×10 ⁻²	0.84	1.27×10 ⁻¹	2.78×10⁻¹⁵	0.78 [0.73-0.83]	4.28×10 ⁻¹	LTA	intron
6	rs3129960	32300809	A	G	0.72	3.50×10 ⁻⁴	0.84	3.67×10 ⁻¹	0.75	1.75×10 ⁻³	0.66	7.08×10 ⁻⁸	0.83	2.23×10 ⁻¹	0.83	1.71×10 ⁻¹	6.67×10⁻¹³	0.73 [0.67-0.80]	5.84×10 ⁻¹	C6orf10/LOC101929163	intron/intron
6	rs9380293	32377284	C	T	1.40	1.30×10 ⁻⁵	1.17	3.35×10 ⁻¹	1.01	9.48×10 ⁻¹	1.27	4.44×10 ⁻⁵	1.09	4.97×10 ⁻¹	1.18	1.93×10 ⁻¹	4.97×10 ⁻⁶	1.22 [1.14-1.31]	1.17×10 ⁻¹	BTNL2	5' flanking
6	rs984778	32400088	C	T	0.70	1.33×10 ⁻⁶	1.13	3.65×10 ⁻¹	1.01	7.76×10 ⁻³	0.86	3.73×10 ⁻³	1.08	4.48×10 ⁻¹	0.90	3.61×10 ⁻¹	1.39×10 ⁻⁶	0.85 [0.80-0.91]	3.56×10 ⁻³	HLA-DRA	5' flanking
6	rs9270957	32573235	A	G	0.65	3.71×10 ⁻⁷	0.91	5.50×10 ⁻¹	0.91	3.10×10 ⁻¹	0.95	4.12×10 ⁻¹	NA	NA	NA	NA	2.75×10 ⁻⁴	0.86 [0.80-0.93]	2.44×10 ⁻³	HLA-DRB1	5' flanking
6	rs7775228	32658079	T	C	1.29	5.39×10 ⁻⁴	1.07	5.96×10 ⁻¹	1.35	1.98×10 ⁻⁴	1.36	3.07×10 ⁻⁹	1.05	6.48×10 ⁻¹	1.08	5.36×10 ⁻¹	6.99×10⁻¹³	1.26 [1.19-1.35]	7.63×10 ⁻²	HLA-DQB1	5' flanking
6	rs2071473	32782605	C	T	1.39	8.37×10 ⁻⁶	1.32	2.26×10 ⁻²	1.09	2.62×10 ⁻¹	1.29	1.22×10 ⁻⁶	1.30	6.06×10 ⁻³	1.15	2.25×10 ⁻¹	6.68×10⁻¹³	1.26 [1.18-1.34]	2.28×10 ⁻¹	HLA-DOB	intron
6	rs9480311	156667058	C	A	1.39	4.29×10 ⁻⁴	1.18	3.32×10 ⁻¹	1.25	1.83×10 ⁻²	1.02	7.99×10 ⁻¹	1.05	7.09×10 ⁻¹	1.02	9.15×10 ⁻¹	1.61×10 ⁻³	1.14 [1.05-1.24]	1.04×10 ⁻¹	LOC101928923	intron
7	rs75400473	52779924	T	C	1.28	3.48×10 ⁻³	1.56	1.51×10 ⁻³	1.18	8.02×10 ⁻²	1.05	4.58×10 ⁻¹	NA	NA	NA	NA	2.22×10 ⁻⁴	1.17 [1.08-1.27]	3.37×10 ⁻²	LOC101928257	5' flanking
7	rs77282866	52823787	G	T	1.46	1.04×10 ⁻³	1.90	3.40×10 ⁻⁴	1.21	2.01×10 ⁻¹	0.98	7.86×10 ⁻¹	0.85	2.85×10 ⁻¹	0.80	2.70×10 ⁻¹	2.44×10 ⁻²	1.13 [1.02-1.26]	3.52×10 ⁻⁴	LOC101928257	5' flanking
7	rs41830	106261427	T	C	1.23	2.71×10 ⁻²	1.44	1.77×10 ⁻²	1.16	8.57×10 ⁻²	0.94	3.98×10 ⁻¹	0.86	1.79×10 ⁻¹	1.11	4.05×10 ⁻¹	9.83×10 ⁻²	1.07 [0.99-1.15]	1.53×10 ⁻²	CTB-30L5.1	intron
7	rs1791001	134125056	G	C	0.79	1.69×10 ⁻²	0.60	1.45×10 ⁻³	0.84	5.70×10 ⁻²	1.05	4.34×10 ⁻¹	1.03	8.18×10 ⁻¹	NA	NA	3.86×10 ⁻²	0.92 [0.85-1.00]	3.31×10 ⁻³	AKR1B1	3' flanking
8	rs2736340	11343973	C	T	1.71	1.34×10 ⁻⁹	1.48	6.12×10 ⁻³	1.56	1.98×10 ⁻⁷	1.51	6.19×10 ⁻¹³	1.48	3.82×10 ⁻⁴	1.55	7.65×10 ⁻⁴	6.62×10 ⁻³	1.55 [1.44-1.66]	8.96×10 ⁻¹	BLK	5' flanking
10	rs4417171	28025034	C	G	1.31	4.31×10 ⁻⁴	1.13	3.86×10 ⁻¹	1.22	8.85×10 ⁻³	0.95	4.12×10 ⁻¹	1.26	3.95×10 ⁻²	1.16	1.68×10 ⁻¹	4.75×10 ⁻⁴	1.13 [1.05-1.20]	1.25×10 ⁻²	MKX	intron
10	rs2251348	117952736	C	T	1.37	1.30×10 ⁻⁴	1.14	3.98×10 ⁻¹	1.33	3.90×10 ⁻³	1.02	6.92×10 ⁻¹	0.89	3.41×10 ⁻¹	1.14	3.07×10 ⁻¹	1.01×10 ⁻³	1.13 [1.05-1.22]	1.07×10 ⁻²	GFRA1	intron
11	rs113420414	11405402	C	T	1.47	1.51×10 ⁻⁴	1.84	2.30×10 ⁻³	1.14	2.56×10 ⁻¹	1.17	3.44×10 ⁻²	NA	NA	NA	NA	3.09×10 ⁻⁶	1.27 [1.15-1.40]	5.13×10 ⁻²	GALNT18	intron
12	rs7963257	97916472	A	G	1.27	1.37×10 ⁻²	1.77	3.59×10 ⁻⁴	1.20	2.91×10 ⁻²	1.10	1.43×10 ⁻¹	1.29	2.2×10 ⁻²	1.14	2.63×10 ⁻¹	1.22×10 ⁻⁶	1.20 [1.12-1.29]	1.11×10 ⁻¹	RMST	intron
13	rs12428318	29096824	C	T	0.71	3.86×10 ⁻⁶	0.95	6.69×10 ⁻¹	0.87	6.58×10 ⁻²	0.94	2.31×10 ⁻¹	0.97	7.39×10 ⁻¹	1.11	3.30×10 ⁻¹	7.03×10 ⁻⁴	0.90 [0.84-0.96]	7.73×10 ⁻³	FLT1	5' flanking
14	rs9322955	35975341	A	G	0.79	1.39×10 ⁻²	0.87	3.52×10 ⁻¹	0.73	1.38×10 ⁻⁴	1.19	1.74×10 ⁻²	1.18	1.27×10 ⁻¹	1.22	1.10×10 ⁻¹	4.41×10 ⁻¹	0.97 [0.90-1.05]	7.94×10 ⁻⁶	LOC107984681	3' flanking
14	rs10145910	52334931	C	T	0.78	6.45×10 ⁻³	0.86	2.62×10 ⁻¹	0.77	1.81×10 ⁻³	0.99	8.64×10 ⁻¹	1.01	9.04×							

Supplementary Table 8. Association data of rs2875151 G/A in three Asian GWAS for KD susceptibility.

Population	cases/controls	RAF in cases	RAF in controls	OR	95% CI	P
Japan	428/3379	0.82	0.76	1.47	1.23-1.77	3.15×10^{-5}
Korea	186/600	0.76	0.73	1.16	0.88-1.53	0.29
Taiwan	622/1107	0.70	0.71	0.95	0.81-1.10	0.47

RAF and odds ratios were calculated on an assumption that the G allele was the risk allele.

RAF, risk allele frequency; OR, odds ratio; CI, confidence interval

Supplementary Table 9. Evaluation of the 7 newly identified significant SNVs in 6p21 region by linkage disequilibrium and logistic regression analyses with rs2857151

SNVs	Position	r ² with rs2857151	Distance from rs2857151	Association statistics ^a		
				SNV of interest	rs2857151	
				OR (95% CI)	<i>P</i> _{logistic}	
				Single-SNV	Conditional ^b	Conditional ^c
rs1873212	27869631	0.022	4893883	1.20 (1.07-1.34) 1.79 × 10 ⁻³	1.14 (1.02-1.28) 0.0224	1.41 (1.25 - 1.59) 3.17×10 ⁻⁸
rs1778477	28248594	0.05	4514920	1.32 (1.15-1.51) 7.45 × 10 ⁻⁵	1.24 (1.08-1.43) 0.00229	1.40 (1.24 - 1.58) 5.06×10 ⁻⁸
rs1264516	30411903	0.034	2351611	1.21 (1.09 - 1.34) 2.89 × 10 ⁻⁴	1.16 (1.04-1.29) 0.00648	1.40 (1.24 - 1.59) 4.42×10 ⁻⁸
rs2857602	31533378	0.083	1230136	1.30 (1.18 - 1.44) 2.69 × 10 ⁻⁷	1.22 (1.10-1.35) 2.18×10 ⁻⁴	1.36 (1.20 - 1.53) 1.78×10 ⁻⁶
rs3129960	32300809	0.029	462705	1.51 (1.30-1.75) 8.53 × 10 ⁻⁸	1.42 (1.22-1.66) 4.80×10 ⁻⁶	1.40 (1.24 - 1.58) 7.08×10 ⁻⁸
rs7775228	32658079	0.125	105435	1.36 (1.23-1.51) 3.59 × 10 ⁻⁹	1.25 (1.12-1.40) 5.41×10 ⁻⁵	1.33 (1.17-1.51) 1.57×10 ⁻⁵
rs2857151	32763514	NA	0	1.45 (1.28-1.63) 1.35 × 10 ⁻⁹	NA	NA
rs2071473	32782605	0.36	19091	1.29 (1.16-1.42) 1.30 × 10 ⁻⁶	1.10 (0.97-1.25) 0.12	1.36 (1.18-1.57) 3.29×10 ⁻⁵

KD, Kawasaki disease; SNV, single nucleotide variant; OR, odds ratio; CI, confidence interval.

^a Association of the SNVs with KD was evaluated in Japanese KD cases (n=1418) and controls (n=1700) prepared as a follow-up sample panel.

^b Association statistics for the SNVs in logistic regression analyses conditioned on rs2857151.

^c Association statistics for rs2857151 in logistic regression analyses conditioned on the other SNV.

Supplementary Table 10. Association of rs6423677 and KD in the Korean and Taiwanese subjects.

Population	case-control sets	Data type	KD		Control		OR (95% CI)	<i>P</i> _{allele}
			n	RAF ^a	n	RAF*		
Korea	Replication	genotyped	568	0.603	556	0.577	1.11 (0.94 - 1.32)	0.22
Taiwan	GWAS	genotyped	91	0.545	188	0.500	1.21 (0.84 - 1.74)	0.30
Taiwan	Replication	genotyped	261	0.536	550	0.543	0.97 (0.79 - 1.20)	0.81

KD, Kawasaki disease; RAF, risk allele frequency; OR, odds ratio; CI, confidence interval

^a C allele of rs6423677 was regarded as the risk allele.

Supplementary Table 11. Characteristics of the KD patients in the immunoglobulin heavy chain repertoire analyses.

Patient	Sex	Age at KD onset	Year and month at KD onset	Number of major symptoms seen in the patients	Response to the initial IVIG treatment	Coronary artery outcome	Genotype at rs6423677	Ethnicity	Illness days when blood samples were obtained			
									Acute phase before receiving IVIG	48 hours after the patients became afebrile	The first visit to the pediatric clinic after discharge	The second visit to the pediatric clinic after discharge
1	M	0y11m	May. 2016	4	Responded	none	CC	Mixed ^a	6	8	20	98
2	F	4y6m	May. 2016	6	Responded	none	AC	Japanese	3	5	17	94
3	M	4y0m	May. 2016	5	Responded	none	CC	Japanese	5	10	17	94
4	F	1y11m	June. 2016	5	Responded	none	AC	Japanese	5	10	17	108
5	M	8y11m	June. 2016	5	Not responded	none	AC	Japanese	8	18	50	113
6	M	2y8m	August. 2018	5	Responded	none	AC	Japanese	6	10	18	96
7	M	4y7m	July. 2018	5	Responded	none	AC	Filipino	5	11	22	92
8	F	4y2m	July. 2018	5	Responded	none	AA	Japanese	6	11	28	109
9	M	1y3m	July. 2018	5	Responded	none	CC	Japanese	3	8	19	89

^a Japanese and Thai.

KD, Kawasaki disease; IVIG, intravenous immunoglobulin

All patients are residents of Chiba prefecture.

Supplementary Table 12. Verification of previously reported frequent CDR3 clonotypes of IgM heavy chains in the acute phase KD patients in Taiwan.

CDR3 clonotypes ^a	Taiwan				Japan	
	KD patients (n=30)		Febrile controls (n=10)		KD patients (n=9)	
	n	%	n	%	n	%
CARDYYYGMDVW	9	30.0	1	10.0	2	22.2
CARSDWFDPW	6	20.0	0	0.0	1	11.1
CARHDWFDPW	5	16.7	2	20.0	2	22.2
CARAGGYYYGMDVW	4	13.3	0	0.0	1	11.1
CARAGNYYYGMDVW	4	13.3	0	0.0	1	11.1
CARVDDYW	4	13.3	0	0.0	1	11.1
CAKSDWFDPW	4	13.3	0	0.0	0	0.0
CARDRSGWYYFDYW	4	13.3	2	20.0	0	0.0
CARDYGGNSGWFDPW	4	13.3	0	0.0	3	33.3
CARGVAAGVDYW	4	13.3	0	0.0	0	0.0
CARIGYSSSSFDYW	3	10.0	0	0.0	0	0.0
CARDSSGWYYFDYW	3	10.0	2	20.0	0	0.0
CAKDSSSWYYFDYW	3	10.0	1	10.0	0	0.0
CARDGYW	3	10.0	0	0.0	1	11.1
CARAGDYYYGMDVW	3	10.0	0	0.0	0	0.0
CARGYYYYMDVW	3	10.0	0	0.0	0	0.0
CARDGSSGWHFDYW	3	10.0	0	0.0	0	0.0
CARDVSGSLDYW	3	10.0	0	0.0	1	11.1
CARDRGDFDYW	3	10.0	0	0.0	0	0.0
CARGFDYW	3	10.0	0	0.0	1	11.1
CARAGSYRFDYW	3	10.0	2	20.0	0	0.0
CARDYYYYMDVW	3	10.0	0	0.0	1	11.1
CARGLYYFDYW	3	10.0	0	0.0	0	0.0
CARAGSFRFDYW	3	10.0	1	10.0	2	22.2
CARDGYNWNDFDYW	3	10.0	0	0.0	0	0.0
CGKDISPGGMDVW	3	10.0	0	0.0	0	0.0
CVRGGYWRFDYW	3	10.0	1	10.0	0	0.0
CTTDPRH	3	10.0	0	0.0	0	0.0
CTTDPRYW	3	10.0	0	0.0	1	11.1
CARAGYYRFDYW	3	10.0	1	10.0	1	11.1
CARGRDYW	3	10.0	0	0.0	0	0.0
CARLPTGYPNWFDPW	3	10.0	0	0.0	0	0.0

^a Thirty-two CDR3 clonotypes of IgM heavy chain transcript that had frequencies of 0.01% or higher among more than 10% of IVIG responsive KD patients in Taiwan when they had not received the treatment (reference #16) are shown.

Those with frequencies of 0.01% or higher in one or more Japanese KD patients in this study were boldfaced.

CDR3, complementarity determining region; KD, Kawasaki disease; IVIG, intravenous immunoglobulin

Supplementary Table 13. *IGHV*, *IGHD* and *IGHJ* genes involved in CDR3 clonotypes of IgM heavy chains commonly increased in the acute phase KD patients in Taiwan and Japan.

Patients	Genotype at rs6423677	<i>IGHV</i> gene	<i>IGHD</i> gene	<i>IGHJ</i> gene	CDR3 ^a	Proportion ^b
1	CC	<i>V3-74*01</i>	.	<i>J5*02</i>	CARSDWFDPW	0.00036
		<i>V3-13*01</i>	<i>D3-22*01</i>	<i>J6*02</i>	CARAGGYYYGMDVW	0.00028
		<i>V3-13*01</i>	<i>D1-7*01</i>	<i>J6*02</i>	CARAGNYYYGMDVW	0.00028
		<i>V3-13*01</i>	<i>D6-13*01</i>	<i>J6*02</i>	CARAGNYYYGMDVW	0.00022
		<i>V3-7*01</i>	<i>D6-25*01</i>	<i>J4*02</i>	CARDGYW	0.00026
		<i>V3-7*01</i>	<i>D5-24*01</i>	<i>J4*02</i>	CARDGYW	0.00017
		<i>V3-74*01</i>	<i>D1-26*01</i>	<i>J4*02</i>	CARAGSFRFDYW	0.00015
		<i>V3-74*01</i>	<i>D3-10*01</i>	<i>J4*02</i>	CARAGYYRFDYW	0.00013
		2	AC	<i>V3-7*01</i>	<i>D1-26*01</i>	<i>J4*02</i>
<i>V3-7*03</i>	<i>D1-26*01</i>			<i>J4*02</i>	CARDVSGSLDYW	0.00012
3	CC	<i>V6-1*01</i>	.	<i>J6*02</i>	CARDYYYGMDVW	0.00035
		<i>V4-4*02</i>	.	<i>J4*02</i>	CARVDDYW	0.00033
		<i>V4-4*02</i>	<i>D3-9*01</i>	<i>J4*02</i>	CARVDDYW	0.000051
		<i>V4-4*02</i>	<i>D5-5*01</i>	<i>J4*02</i>	CARVDDYW	0.000019
		<i>V4-34*01</i>	<i>D5-5*01</i>	<i>J4*02</i>	CARVDDYW	0.000012
		<i>V3-74*01</i>	<i>D1-26*01</i>	<i>J4*02</i>	CARAGSFRFDYW	0.00023
5	AC	<i>V1-8*01</i>	<i>D4-23*01</i>	<i>J5*02</i>	CARDYGGNSGWFDPW	0.000212
6	AC	<i>V1-8*01</i>	<i>D4-23*01</i>	<i>J5*02</i>	CARDYGGNSGWFDPW	0.00012
8	AA	<i>V3-53*01</i>	.	<i>J5*02</i>	CARHDWFDPW	0.00012
		<i>V1-8*01</i>	<i>D4-23*01</i>	<i>J5*02</i>	CARDYGGNSGWFDPW	0.00013
		<i>V3-48*02</i>	.	<i>J4*02</i>	CARGFDYW	0.00011
		<i>V3-21*01</i>	.	<i>J4*02</i>	CARGFDYW	0.000012
		<i>V3-33*01</i>	.	<i>J4*02</i>	CARGFDYW	0.000012
		<i>V3-15*01</i>	<i>D1-14*01</i>	<i>J4*02</i>	CTTDPYRW	0.00080
		<i>V3-15*01</i>	<i>D3-16*02</i>	<i>J4*02</i>	CTTDPYRW	0.00013
		<i>V3-15*01</i>	.	<i>J4*02</i>	CTTDPYRW	0.000024
9	CC	<i>V3-23*01</i>	<i>D1-14*01</i>	<i>J4*02</i>	CTTDPYRW	0.000012
		<i>V6-1*01</i>	.	<i>J6*02</i>	CARDYYYGMDVW	0.00058
		<i>V3-66*04</i>	.	<i>J5*02</i>	CARHDWFDPW	0.00020
		<i>V6-1*01</i>	.	<i>J6*03</i>	CARDYYYYMDVW	0.00019

^a CDR3 clonotypes of IgM heavy chain transcript demonstrated as commonly increased ones in Table S7.

^b *IGHV-IGHD-IGHD* combinations with proportions larger than 0.001% were shown.

CDR3, complementarity determining region; KD, Kawasaki disease